GRADE 11 · EQUATIONS AND INEQUALITIES

Solving Quadratic Equations: Factorising, Formula and Completing the Square

EXAM-STYLE CLASS TEST

MARKS	DURATION	QUESTIONS
35	55 minutes	3

Name: _____ Class: _____

Date: _____

MARK ____ / 35

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 Solve for x: $x^2 - 5x + 6 = 0$ (1)

A) $x = 5$ or $x = 6$
B) $x = -2$ or $x = -3$
C) $x = 1$ or $x = 6$
D) $x = 2$ or $x = 3$

1.2 Solve for x: $x(2x + 6) = 0$ (1)

A) $x = -3$ only
B) $x = -6$ only
C) $x = 0$ or $x = -3$
D) $x = 0$ or $x = 3$

1.3 Solve for x, correct to TWO decimal places: $4x^2 = 9 - 3x$ (1)

A) $x = 1{,}50$ or $x = -1{,}50$
B) $x = 12{,}37$ or $x = -12{,}37$
C) $x = 1{,}17$ or $x = -1{,}92$
D) $x = -1{,}17$ or $x = 1{,}92$

1.4 The quadratic formula is $x = \ldots$ (1)

A) $\dfrac{-b \pm \sqrt{b^2 - 4ac}}{a}$
B) $\dfrac{-b \pm \sqrt{b^2 + 4ac}}{2a}$
C) $\dfrac{b \pm \sqrt{b^2 - 4ac}}{2a}$
D) $\dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

1.5 Solve for x: $x^2 = 16$ (1)

A) $x = 8$
B) $x = 4$ or $x = -4$
C) $x = 256$
D) $x = 4$ only

1.6 Completing the square turns $x^2 + 6x = 7$ into ... (1)

A) $(x + 6)^2 = 43$ **B)** $(x + 3)^2 = 9$

C) $(x + 3)^2 = 16$ **D)** $(x + 3)^2 = 7$

1.7 Hence the solutions of $x^2 + 6x = 7$ are ... (1)

A) $x = 1$ or $x = -7$ **B)** $x = 1$ only

C) $x = 7$ or $x = -1$ **D)** $x = 4$ or $x = -4$

1.8 A quadratic equation has ... (1)

A) at least two real roots **B)** exactly one real root

C) exactly two real roots **D)** at most two real roots

1.9 Solve for x: $2x^2 - 8 = 0$ (1)

A) $x = 4$ or $x = -4$ **B)** $x = 2$ or $x = -2$

C) $x = \sqrt{8}$ **D)** $x = 2$ only

1.10 Two consecutive POSITIVE integers have a product of 42. The smaller one is ... (1)

A) 6 **B)** 7

C) 21 **D)** 42

ANSWER GRID — CIRCLE YOUR ANSWERS FOR QUESTION 1

1.1	A	B	C	D
1.2	A	B	C	D
1.3	A	B	C	D
1.4	A	B	C	D
1.5	A	B	C	D
1.6	A	B	C	D
1.7	A	B	C	D
1.8	A	B	C	D
1.9	A	B	C	D
1.10	A	B	C	D

QUESTION 2 [12 MARKS]

Solve for x. Where a calculator is needed, give your answers correct to TWO decimal places.

2.1 $2x^2 - 5x + 3 = 0$ (3)

2.2 $x = \sqrt{x + 12}$ **(5)**

2.3 $3x^2 + 5x - 1 = 0$, correct to TWO decimal places **(4)**

QUESTION 3 [13 MARKS]

Answer the questions below.

3.1 Solve for x and y simultaneously: $5x - y = 2$ and $2x^2 - 3y = 4$ **(6)**

3.2 Determine the value(s) of k for which $x^2 + (k + 2)x + 9 = 0$ has EQUAL roots. **(4)**

3.3 Explain why the roots of a quadratic can be checked by substituting them back into the ORIGINAL equation, and why this matters when a surd equation is solved. **(3)**

TOTAL: 35 marks

This question paper consists of 3 questions.

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